The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1. (withdrawn) A method for making prioritized recommendations to a customer in the process of filling a market basket for purchase on an Internet commerce site, the method comprising the steps of:

generating a matrix of training data;

considering preferences based on associative and renewal buying history from the training data; and

making a prioritized recommendation of items so as to maximize the likelihood that the customer will add to the market basket those items with higher priorities.

2. (withdrawn) The method of claim 1, wherein the two preferences are estimated separately from the training data and combined in proper proportions to obtain an overall preference for item not yet in the market basket.

3. (original) A method for making prioritized recommendations to a customer in the process of filling a market basket for purchase on an Internet commerce site, the method comprising the steps of:

collecting statistics from training data;

precomputing model parameters from the collected statistics; and

recommending ordering for a given partial market basket based on the precomputed model parameters.

4. (original) The method of claim 3, wherein the step of collecting statistics comprises the steps of:

(a) for each item j, obtaining n_j a number of baskets with item j purchased;

(b) for each item j, obtaining n_j' a number of baskets with j being a sole item purchased;

(c) for each pair of items i and j, obtaining a number of market baskets n_{ji} with items j and i purchased together; and

(d) for each pair of items i and j, obtaining a number of market baskets n_{ji}' with items i and j being the only two items purchased.

5. (original) The method of claim 4, wherein the step of precomputing model parameters comprises the steps of:

(a) computing $\mathbf{P}(\text{renewal}) = \dfrac{\sum_k n_k'}{\sum_k n_k}$;

(b) for each item j, computing $\mathbf{P}(j) = \dfrac{n_j}{\sum_k n_k}$;

(c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \dfrac{n_j'}{n_j} + \mathbf{P}(\text{renewal})\left(1 - \dfrac{n_j'}{n_j}\right)$;

(d) for each item j, computing

$$\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \frac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})};$$

(e) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}(j \mid i) = \frac{n_{ji}}{\sum_k n_{ki}};$$

(f) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + \mathbf{P}(\text{renewal})\left(1 - \frac{n_{ji}'}{n_{ji}}\right) ; \text{ and}$$

(g) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}'(j \mid \text{asso},i) = \mathbf{P}(j \mid i) \times \frac{(1-\mathbf{P}(\text{renewal} \mid j,i))}{(1-\mathbf{P}(\text{renewal} \mid i))} .$$

6. (original) The method of claim 5, wherein given a partial basket $\mathbf{B} = \{i_1, i_2, \ldots, i_k\}$ and $\overline{\mathbf{B}}$ is a complementary set of items not in **B**, the step of recommending ordering for a given partial market basket comprises the steps of:

(a) if **B** is empty, sorting items in order of decreasing $\mathbf{P}(j \mid \text{renewal})$ and returning this as an item preference ordering;

(b) if **B** is non-empty, then

(i) computing $\mathbf{P}(\text{renewal} \mid \mathbf{B}) = \min_{i_k \in \mathbf{B}} \mathbf{P}(\text{renewal} \mid i_k)$;

(ii) compute a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})$;

(iii) for each item $j \in \overline{\mathbf{B}}$, computing

$$\mathbf{P}(j \mid \text{renewal}) = \frac{\mathbf{P}'(j \mid \text{renewal})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})} ;$$

(iv) computing a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(j \mid \text{asso},\mathbf{B})$;

(v) for each item$j \in \overline{\mathbf{B}}$, computing

$\mathbf{P}'(j \mid \text{asso},\mathbf{B}) = \max_{i_k \in \mathbf{B}} \mathbf{P}(j \mid \text{asso},i_k)$;

(vi) for each item $j \in \overline{\mathbf{B}}$, computing

$$\mathbf{P}(j \mid \text{asso},\mathbf{B}) = \frac{\mathbf{P}'(j \mid \text{asso},\mathbf{B})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{asso},\mathbf{B})};$$

(vii) for each item $j \in \overline{\mathbf{B}}$, computing

$\mathbf{P}(j|\mathbf{B}) = \mathbf{P}(j \mid \text{asso},\mathbf{B})\mathbf{P}(\text{asso} \mid \mathbf{B}) + \mathbf{P}(j \mid \text{renewal},\mathbf{B})\mathbf{P}(\text{renewal} \mid \mathbf{B})$; and

(viii) sorting items in order of decreasing $\mathbf{P}(j \mid \mathbf{B})$ and returning this as an item preference ordering.

7. (original) The method of claim 6, wherein the step of sorting comprises the step of using a final probability obtained for each item, $\mathbf{P}(j \mid \mathbf{B})$, of a customer buying the item to maximize profit by recommendation.

8. (original) The method of claim 7, wherein the step of using a final probability of an item to maximize profit comprises the steps of:

assigning a profit amount, $\$_j$, to each item;

computing $\mathbf{P}(j \mid \mathbf{B})\$_j$ for each item; and

ranking recommendations based on the computation of $\mathbf{P}(j \mid \mathbf{B})\$_j$ for each item.

9. (new) A method for making prioritized recommendations to a customer in the process of filling a market basket for purchase on an Internet commerce site, the method comprising the steps of:

collecting statistics on preferences for associative and renewal buying from training data;

precomputing model parameters from the collected statistics; and

recommending ordering for a given partial market basket based on the precomputed model parameters.

10. (new) The method of claim 9, wherein the step of collecting statistics comprises the steps of:

(a) for each item j, obtaining n_j a number of baskets with item j purchased;
(b) for each item j, obtaining n_j' a number of baskets with j being a sole item purchased;
(c) for each pair of items i and j, obtaining a number of market baskets n_{ji} with items j and i purchased together; and
(d) for each pair of items i and j, obtaining a number of market baskets n_{ji}' with items i and j being the only two items purchased.

11. (new) The method of claim 10, wherein the step of precomputing model parameters comprises the steps of:

(a) computing $\mathbf{P}(\text{renewal}) = \dfrac{\sum_k n_k'}{\sum_k n_k}$;

(b) for each item j, computing $\mathbf{P}(j) = \dfrac{n_j}{\sum_k n_k}$;

(c) for each item j, computing $\mathbf{P}(\text{renewal} \mid j) = \dfrac{n_j'}{n_j} + \mathbf{P}(\text{renewal})\left(1 - \dfrac{n_j'}{n_j}\right)$;

(d) for each item j, computing

$$\mathbf{P}'(j \mid \text{renewal}) = \mathbf{P}(\text{renewal} \mid j) \times \frac{\mathbf{P}(j)}{\mathbf{P}(\text{renewal})};$$

(e) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}(j \mid i) = \frac{n_{ji}}{\sum_k n_{ki}};$$

(f) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}(\text{renewal} \mid j,i) = \frac{n_{ji}'}{n_{ji}} + \mathbf{P}(\text{renewal})\left(1 - \frac{n_{ji}'}{n_{ji}}\right) ; \text{ and}$$

(g) for each pair of items i and j with $n_{ij} \neq 0$, computing

$$\mathbf{P}'(j \mid \text{asso},i) = \mathbf{P}(j \mid i) \times \frac{(1-\mathbf{P}(\text{renewal} \mid j,i))}{(1-\mathbf{P}(\text{renewal} \mid i))} .$$

12. (new) The method of claim 11, wherein given a partial basket $\mathbf{B} = \{i_1, i_2, \ldots, i_k\}$ and $\overline{\mathbf{B}}$ is a complementary set of items not in **B**, the step of recommending ordering for a given partial market basket comprises the steps of:

(a) if **B** is empty, sorting items in order of decreasing $\mathbf{P}(j \mid \text{renewal})$ and returning this as an item preference ordering;

(b) if **B** is non-empty, then

(i) computing $\mathbf{P}(\text{renewal} \mid \mathbf{B}) = \min_{i_k \in \mathbf{B}} \mathbf{P}(\text{renewal} \mid i_k)$;

(ii) compute a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})$;

(iii) for each item $j \in \overline{\mathbf{B}}$, computing

$$\mathbf{P}(j \mid \text{renewal}) = \frac{\mathbf{P}'(j \mid \text{renewal})}{\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(k \mid \text{renewal})} ;$$

(iv) computing a normalization factor $\sum_{k \in \overline{\mathbf{B}}} \mathbf{P}'(j \mid \text{asso},\mathbf{B})$;

(v) for each item$j \in \overline{\mathbf{B}}$, computing

$\mathbf{P}'(j \mid \text{asso},\mathbf{B}) = \max_{i_k \in \mathbf{B}} \mathbf{P}(j \mid \text{asso},i_k)$;